1,033,987

PATENT SPECIFICATION

DRAWINGS ATTACHED

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Int. Cl.:—B 29 d, f, g

COMPLETE SPECIFICATION

A Method of Forming Shells to Simulate either Solid Fuel Fires or Fuel for such Fires

I, ANTHONY JOSEPH DAVIES of 22, Lysways Street, Walsall in the County of Stafford, a British Subject, do hereby declare the invention for which I pray that a Patent may be granted to me, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to a method of forming shells to simulate either solid fuel fires or fuel for such fires and has for its object to provide an improved method, which is simple to perform and which produces realistic effects at a relatively low cost.

Accordingly, the invention consists of a method of forming shells to simulate solid fuel fires and comprises in first forming a master mould of the fire to be simulated, subsequently moulding therefrom in a resilient synthetic plastics material a female mould, preparing from the female mould a male mould also of a resilient synthetic plastics material by direct casting into the female mould and then either applying to the female mould liquid polyester resin to which has been added an activating agent for promoting setting and draping a sheet of glass fibre mat into the coated female mould or applying polyester resin activated as aforesaid to a sheet of glass fibre mat and draping the impregnated mat into the female mould, subsequently inserting the male mould into the female mould and applying pressure to the male mould, and thereafter releasing the applied pressure and allowing the resultant shell to cure either at ambient temperature or under the influence of heat, as may be preferred and subsequently removing the male mould from the cured shell and the cured shell from the female mould.

Accordingly the invention also consists of a method of forming shells to simulate solid fuel for the building of simulated solid fuel fires and comprises taking a piece of the fuel to be simulated and enveloping the fuel in a resilient synthetic plastics material and curing the said material to provide a mould envelope, slitting the said mould envelope and drawing apart the portions bounding the slit to permit of the removal of the fuel and thereby to produce a female mould, treating the inside of the female mould so formed with a parting agent to prevent adhesion in the subsequent procedure and then forming a male mould by filling the cavity of the female mould with a resilient synthetic plastics material, allowing the synthetic plastics material filling the said cavity to set and after setting removing the male mould so produced through the slit, wrapping around the male mould a sheet of fibre glass mat impregnated with liquid polyester resin to which has been added an activating agent for promoting setting, inserting the wrapped male mould into the female mould through the slit aforesaid leaving portions of the mat projecting through the slit with a slight opening between the said projecting portions and applying pressure to the sides of the female mould, allowing time for partial gelling of the polyester resin and then widening the slit in the female mould and the fibre glass shell and removing the male mould leaving the impregnated partly cured mat within the female mould, allowing the female mould to close on to the projecting portions of the mat and allowing the cure to proceed, subsequently withdrawing the fibre glass simulated fuel shell produced from within the female mould, removing the flashing from the shell and as and when required applying the simulated fuel to a shell of "ash" moulded from synthetic plastics material to form a simulated solid fuel fire.

The invention also includes a method of manufacturing shells for simulating solid fuel fibres substantially as will be described hereinafter.

The invention further includes the method

of forming shells for simulating fuel for simulated solid fuel fires substantially as will be described hereinafter.

Methods of carrying the invention into effect will now be described with particular reference to the accompanying sets of diagrams which illustrate the invention as applied to a method of forming shells for simulating solid fuel fires and fuel for such fires, for use in conjunction with electric fires and which are required to incorporate means for producing a flickering effect in accordance with accepted practice.

In the drawings Figures 1 to 8 illustrate the various steps in the formation of a simulated solid fuel fire in accordance with the invention and the Figures 9 to 18 the steps involved in forming simulated fuel for simulated solid fires, in accordance with the invention. In the drawings the Figures 2 to 7 are cross sections illustrative in sequence of the various steps in the production of a simulated solid fuel fire as seen in Figure 8 and Figures 10 to 15 are cross sections illustrative in sequence of the various steps in the production of simulated fires as illustrated in Figure 9. Moreover in the drawings thicknesses and spacings are exaggerated in the interests of clarity and similar reference numerals are employed to denote similar or analogous parts in the several views.

Referring first to the manner of carrying the invention to effect as depicted in Figures 1 to 8:—

As illustrated in Figure 1 two coals 20 are set into plaster 201 on a baseboard 21 to form a master mould 22. The master mould 22 so produced is placed inside a box 23, see Figure 2, whereupon a resilient synthetic plastics material, conveniently polyvinyl chloride, is poured into the box 23 on top of the master mould 22 and allowed to set, see Figure 3. When curing has taken place the mould is stripped from the master mould 22 thereby producing a flexible female mould 24, see Figure 4, which carries a perfect impression of the original master mould 22 of Figure 1.

The inner surface of the female mould 24 produced as shown in Figure 4 is then treated with a parting agent to prevent adhesion in the subsequent moulding procedures and the inside of the female mould 24 filled with a similar resilient flexible synthetic plastics material without making any dimensional allowances for the thickness of the article to be produced as normally would be the case, when making a pair of matched tools, see Figure 5.

When the material in the cavity of the female mould 24 has cured to form a male mould 25 the said male mould 25 is removed. Thus the mouding operations described result in the production of a pair of perfectly matched "tools" in a flexible material, see Figure 6.

Describing now the production of a shell for a simulated solid fuel fire from the pair of matched "tools" aforesaid:—

There is brushed onto the moulded surface of the female mould 24 polyester resin in liquid form to which has been added an activating agent for promoting setting and then there is draped into the female mould so coated a sheet of glass fibre mat 26 whereupon the male mould 25 is pressed into the draped female mould 24 and pressure applied thereto to produce the shell 27, see Figure 7.

Alternatively the activated polyester resin as aforesaid, may be brushed onto a sheet of fibre glass mat which is draped into the female mould 24 preparatory to the pressing of the male mould 25 into the female mould 24 and the application of pressure to produce the shell.

After the lapse of a short period of time to allow for the partial curing of the resin the applied pressure is released and the male mould 25 permitted to remain in position within the female mould 24 and to exert a limited pressure on the interposed fibre glass mat 26 under the influence of its own mass, see Figure 7. The male mould 25 is left in position for a sufficient period to allow the now moulded shell 27 to cure at ambient temperatures.

After curing has been accomplished the shell 27 is removed in readiness for colouring or finishing processes, see Figure 8.

If desired instead of allowing the shell 27 to cure at ambient temperatures curing can be allowed to take place by the application of heat in an oven at a moderate temperature say not exceeding 40°C (132°F).

According to a manner of carrying the invention into effect as illustrated in Figures 9 to 18 as applied to the production of a shell to simulate a log, a single log 20 of desired size and shape, see Figure 9, is placed inside a box 23 as seen in Figure 10 and then there is poured into the box 23 on top of and around the log 20*a* a molten synthetic plastics material such as polyvinyl chloride or liquid rubber, see Figure 11. After curing of the plastics material the mould which envelops the log 20*a* is slit as at 24*b* and the sides of the slit 24*b* expanded by stretching to allow the log 20*a* to be removed and thereby to produce a female mould 24*a*, see Diagram 12. The inner surface of the female mould 24*a* so produced is then treated with a parting agent to prevent adhesion in the subsequent molding procedures and the cavity of the female mould 24*a* filled with the same flexible and resilient synthetic plastics material, see Figure 13. When the filled material in the cavity has set the slit 24*b* is again expanded by stretching to allow of the withdrawal of the cured filling which now constitutes a male mould 25*a*, see Figure 14. Thus again a set of perfectly matched "tools" in a flexible material are produced.

The inner surface of the female mould 24*a* is now coated with liquid activated polyester resin and the male mould 25*a* with a polyester resin impregnated glass fibre mat 26*a* wrapped there around is inserted in the female mould 24*a* through the slit 24*b* leaving a small opening between the end portions of the mat 26*a*. The slit 24*b* is then allowed to close with the surplus external portions of the mat 26*a* drawn over the top of the separated sides of the female mould 24*a*. Heavy blocks 28 are then placed against the sides of the female mould 24*a* to apply a gentle pressure, see Figure 15. When the polyester resin has gelled but before complete hardening of the slit 24*b* is expanded and the male mould 25*a* withdrawn, see Figure 16.

The partially cured moulded mat 26*a* is allowed to remain with the projecting portions of the mat 26*a* pressed into contact on the contraction of the walls bounding the slit 24*b*.

When curing has progressed the moulded mat 26a withdrawn through the slit 24*b* and has the appearance seen in Figure 17.

The flashing 26*b*, see Figure 17, is removed and the moulded shell 27 assumes the appearance of a circular log possessing the configuration and shape of the log 20*a* used as the master mould.

The shell is then painted or otherwise coloured as may be required.

For producing a simulated solid fuel fire a number of shells of logs produced as aforesaid are laid on and attached to a shell of "ash" moulded in a transparent synthetic plastics material by conventional methods to produce an imitation solid fuel fire possessing a most realistic effect, see Diagram 18.

It will be appreciated that the activated polyester resin or the sheet of glass fibre may be impregnated with an activated polyester resin by brushing or spraying or other methods.

Further it will be appreciated that the male and female moulds may be made from material other than polyvinyl chloride for example synthetic or natural rubber and it is to be understood that the expression synthetic plastics material as used herein is to be interpreted as including synthetic rubber and natural rubber.

WHAT I CLAIM IS:—

1. A method of forming shells to simulate solid fuel fires comprising first forming a master mould of the fire to be simulated, subsequently moulding therefrom in a resilient synthetic plastics material as herein defined a female mould, preparing from the female mould a male mould also of a resilient synthetic plastics material by direct casting into the female mould and then either applying to the female mould liquid polyester resin to which has been added an activating agent for promoting setting and draping a sheet of glass fibre mat int the coated female mould or applying polyester resin activated as aforesaid to a sheet of glass fibre mat and draping the impregnated mat into the female mould, subsequently inserting the male mould into the female mould and applying pressure, and thereafter releasing the applied pressure and allowing the resultant shell to cure either at ambient temperature or under the influence of heat, as may be preferred and subsequently removing the male mould from the cured shell and the cured shell from the female mould.

2. A method of forming shells to simulate solid fuel for the building of simulated solid fuel fires comprising taking a piece of the fuel to be simulated and enveloping the fuel in a resilient synthetic plastics material in liquid form to which has been added an activating agent for promoting setting and curing the said material to provide a mould envelope, slitting the said mould envelope and drawing apart the portions bounding the slit to permit of the removal of the fuel and thereby to produce a female mould, treating the inside of the female mould so formed with a parting agent to prevent adhesion in the subsequent procedure and then forming a male mould by filling the cavity of the female mould with a resilient synthetic plastics material as herein defined, allowing the synthetic plastics material filling the said cavity to set and after setting removing the male mould so produced through the slit, wrapping around the male mould a sheet of glass fibre mat impregnated with liquid polyester resin to which has been added an activating agent for promoting setting, inserting the wrapped male mould into the female mould through the slit aforesaid leaving portions of the mat projecting through the slit with a slight opening between the said projecting portions and applying pressure to the sides of the female mould, allowing time for partial gelling of the polyester resin and then widening the slit in the female mould and removing the male mould leaving the impregnated partly cured mat within the female mould, allowing the female mould to close on to the projecting portions of the mat and allowing the cure to proceed, subsequently withdrawing the glass fibre simulated fuel shell produced from within the female mould, removing the flashing from the shell and as and when required applying the simulated fuel to a shell of "ash" moulded from synthetic plastics material to form a simulated solid fuel fire.

3. A simulated solid fuel fire shell whenever produced by a method as claimed in claim 1.

4. A simulated solid fuel shell whenever produced by a process as claimed in claim 2.

5. A solid fuel fire whenever built up from simulated solid fuel shells as claimed in claim 2.

6. A shell simulating a solid fuel fire when-

ever produced by the method substantially as described herein with reference to Figures 1 to 8 of the accompanying drawings.

7. A shell simulating a solid fuel fire whenever produced by the method substantially as described herein with reference to Figures 9 to 18 of the accompanying drawings.

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Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtaine

FIG.1.

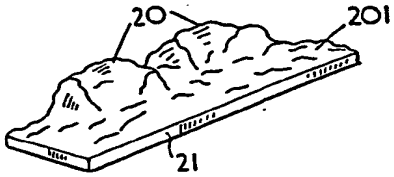


FIG.2.

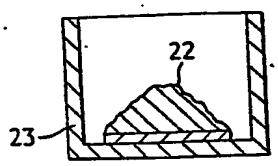
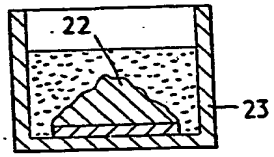


FIG.3.



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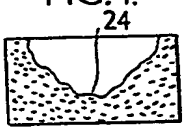


FIG.5.

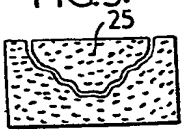


FIG.6.

FIG.7.

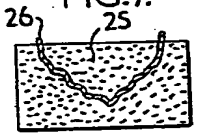


FIG.8.

FIG.9.

FIG.10.

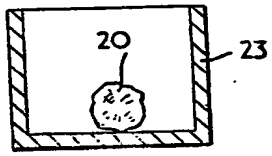
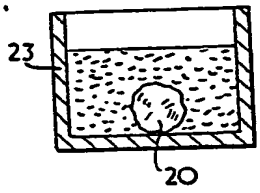


FIG.11.



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Sheets 1 & 2

FIG.12.

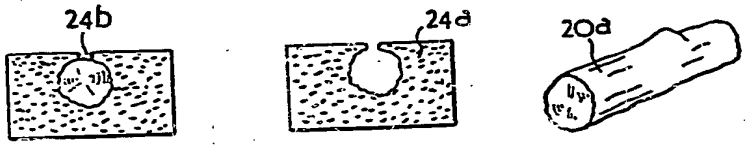


FIG.13.

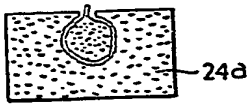


FIG.14.

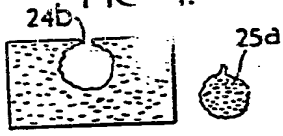


FIG.15.

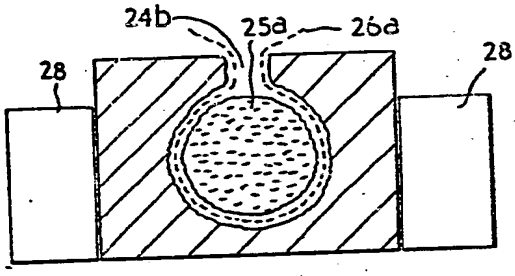


FIG.16.

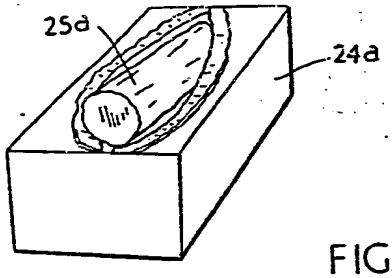


FIG.17.

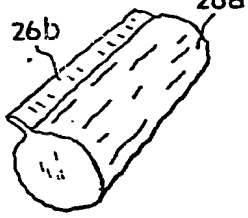
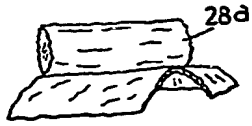


FIG.18.



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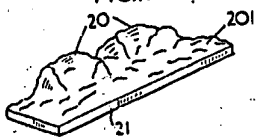

FIG.2.

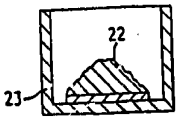

FIG.3.

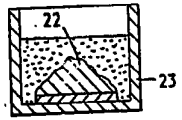

FIG.4.

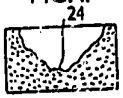

FIG.5.

FIG.6.

FIG.7.

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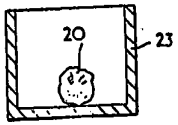

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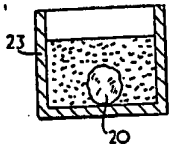

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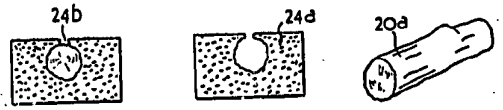

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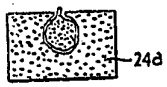

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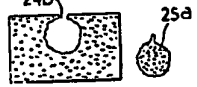

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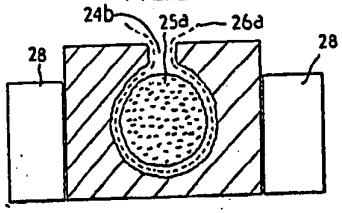

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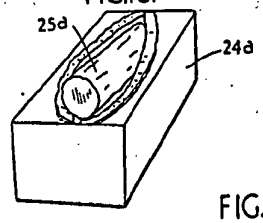

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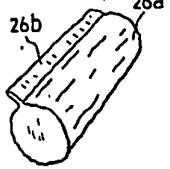

FIG.18.